Results of Laparoscopic Pelvic and/or Para-Aortic Lymphadenectomy in Gynecologic Oncology Patients in Bangkok Metropolitan Administration Medical College and Vajira Hospital

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Objective: *To determine the results of laparoscopic lymphadenectomy in gynecologic oncology patients.*
Material and Method: *Medical records of 31 gynecologic oncology patients who underwent laparoscopic lymphadenectomy between November 1, 2004 and February 28, 2007 were retrospectively reviewed.*
Results: *The median age of the study population was 47 years (range 24-77 years). Sixteen patients (51.6%) had endometrial cancer while 15(48.4%) had ovarian malignancy, with median numbers of resected pelvic and paraaortic nodes of 12 (range 3-30 nodes) and 1 (range 1-3 nodes). The groups of lymphadenectomy only, lymphadenectomy with total laparoscopic hysterectomy, and lymphadenectomy with laparoscopic assisted vaginal hysterectomy had median blood losses of 100 ml (range 30-220 ml), 350 ml (range 100-800 ml), and 200 ml (range 150-400 ml) respectively. Accidental injuries of common iliac artery and large bowel occurred in two patients, all of whom were converted to a laparotomy for correcting the damaged sites. Overall, the median duration for postoperative recovery was three days (range 2-8 days).*
Conclusion: *The results suggest that surgical staging for gynecologic malignancies can be adequately performed through laparoscopic surgery, with benefit in terms of early postoperative recovery.*

Keywords: *Endometrial cancer, Laparoscopic lymphadenectomy, Ovarian cancer*

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A retroperitoneal lymph node dissection is one part of the standard surgical staging for ovarian and endometrial carcinoma, which is performed to determine the patient's prognosis and to decide on further management[1]. In the operative point of view, the procedure achieved by a traditional laparotomy may cause high blood loss and delayed postoperative recovery. During the last two decades, minimal invasive surgical techniques have been introduced into the gynecologic oncology field[2,3]. Laparoscopic assisted surgical staging has been successfully performed in patients having endometrial cancer, with low post-operative morbidity[3]. Likewise, laparoscopic staging in patients with incompletely staged ovarian cancer have been reported in a number of studies[4,5], with several advantages including reduced postoperative recovery time and lower intraoperative blood loss.

In Thailand, the drawback of laparoscopic surgery for gynecologic conditions may lie on various

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factors such as the limited numbers of skilled surgeons, a time-consuming development of surgical techniques, as well as the restricted quantities of sophisticated instruments. In women with benign uterine lesions, one recent report demonstrated that laparoscopic assisted vaginal hysterectomy (LAVH) yielded lesser painful, lesser hospital stay, and earlier postoperative recovery when compared to total abdominal hysterectomy[6]. Nevertheless, there is still a lack of published data on a Thai population-based group regarding laparoscopic surgery for gynecologic malignancies.

Laparoscopic lymphadenectomy for gynecologic cancer has been gradually evolved in the Bangkok Metropolitan Administration (BMA) Medical College and Vajira Hospital over two years. The present study was aimed to evaluate the results of transperitoneal pelvic and/or para-aortic laparoscopic lymphadenectomy in gynecologic oncology patients.

Material and Method

The present study was conducted after approval from the BMA Ethic Committee For Researches Involving Human Subjects. Medical records of all gynecologic oncology patients who underwent transperitoneal pelvic and/or para-aortic laparoscopic lymphadenectomy between November 2004 and February 2007 in the BMA Medical College and Vajira Hospital were reviewed. Staging procedure included cytologic washing, omentectomy and nodal dissection, and was classified according to the International Federation of Gynecology and Obstetrics system[1]. The standard laparoscopic procedure for surgical staging was carried out. In brief, five trocars were placed at the abdominal wall: one 10-mm trocar at Lee-Huang's point (middle between xiphoid process and umbilicus) and the other 10-mm. trocar in left paraumbillicus. Three 5-mm trocars were punctured right lower abdomen, left lower abdomen and right paraumbillicus.

The following data were collected: age, histology, surgical procedure, diagnosis, operative blood loss during procedure, resected nodes and node status, and intraoperative and postoperative complications related to the laparoscopic procedure including organ injury. In the event that a laparoscopic surgery was converted to laparotomy, data on operative time and blood loss would not be included for analysis. For the current study, the operative time was calculated from timing when the first skin incision was done until the laparoscopic procedure was accomplished when the skin was closed. The length of postoperative recovery was defined as the number of completed days after the operation. The day of recovery referred to the completed day after the operation, in that the patients could have an ordinary diet and had fully returned to a normal daily activity.

Statistical analysis was performed with the SPSS software package version 11.5 (SPSS Inc., Chicago, IL, USA). Clinical data were presented as median with range for continuous variables, and as number with percentage for categorical variables.

Results

During the study period, medical records of 31 patients who underwent transperitoneal pelvic and/or paraaortic lymphadenectomy were identified. The median age of the study population was 47 years (range 24-77). Sixteen patients (52.6%) had endometrial cancer and 15 (48.4%) had ovarian cancer. Two primary cancers were identified in two patients; one with combined ovarian/endometrial carcinoma and the other one with mutual ovarian/cervical cancer. Clinical characteristics of the study are shown in Table 1.

Operative time and blood loss were evaluated from data set of 29 patients (Table 2); two cases were excluded because of accidental injuries of common iliac artery and large bowel, from which the injured sites could not be managed laparoscopically. Aside from the lymphadenectomy procedure, 14 patients also underwent other concomitant surgeries including total laparoscopic hysterectomy (TLH) (n = 8), and laparoscopic assisted vaginal hysterectomy (LAVH) (n = 6). Median number of resected para-aortic nodes in six patients was 1 (range 1-3 nodes) while a median number of resected pelvic nodes of 12 (range 3-30 nodes). Positive pelvic nodes for malignant cells were found in two patients; one with endometrial cancer who was diagnosed as stage IIIC and one with two-primary cancer of stage IC ovarian/stage IIB cervical carcinoma. In the latter patient, one positive pelvic node metastasis was from cervical squamous cell carcinoma. No metastasis of malignant cells was found in any of the resected para-aortic nodes.

One of the seven restaged ovarian cancer were upstaged to IIIB because of microscopic omental metastasis of clear cell carcinoma from ruptured endometrioma. The FIGO stage is shown in Table 3.

As mentioned before, two major complications (6.5%) occurred intraoperatively; one case had iliac artery injury and one had large bowel injury. Both patients needed a conversion of the operation to laparotomy for correcting the injuries. Intraoperative minor complications were observed in two cases; one

Table 1. Patient characteristics

Characteristics	Total patients (n = 31)
Median age (years)	47 (24-77)
Parity	
Nullipara	12 (38.71%)
Multipara	19 (61.29%)
Diagnosis	
Endometrial cancer (n = 16): n (%)	
Endometriod grade1	6 (19.35)
Endometriod grade2	4 (12.90)
Endometriod grade3	4 (12.90)
Adenosquamous	2 (6.45)
Ovarian cancer (n = 13): n (%)	
Serous cystadenocarcinoma	1 (3.22)
Mucinous cystadenocarcinoma	3 (9.68)
Endometriodcarcinoma on endometrioma	4 (12.90)
LMP mucinous cystadenocarcinoma	2 (6.45)
Endodermal sinus tumor	1 (3.22)
Squamous cell carcinoma on teratoma	1 (3.22)
Clear cell carcinoma on endometrioma	1 (3.22)
Two primary cancers (n = 2): n (%)	
Serous cystadenocarcinoma of ovary with squamous cell cervical carcinoma*	1 (3.22)
Clear cell carcinoma of ovary with endometrioid grade 1 endometrial carcinoma**	1 (3.22)

Data are presented as median (range) or n (%)
* This patient was a known case of cervical cancer with ovarian tumor. The frozen section of the ovary showed evidence of malignancy
** The patient was refered for restaging post total abdominal hysterectomy with salpingo-oophorectomy (TAH/BSO)

Table 2. Estimated blood loss and operative time (n = 29)

	Additional hysterectomy		
	No (n = 15)	TLH* (n = 8)	LAVH** (n = 6)
Operative blood loss (ml)	100 (30-220)	350 (100-800)	200 (150-400)
Operative time (hours)	3.10 (2.30-4.25)	5.03 (4.20-6.40)	4.77 (4.20-5.15)

LAVH**, laparoscopic assisted vaginal hysterectomy; TLH*, total laparoscopic hysterectomy
Two patient who were converted to open surgery were excluded

Table 3. FIGO stage distribution

	IA	IB	IC	IIA	IIB	IIIA	IIIB	IIIC
Endometrial cancer (n = 17)	5*	5	2	1	1	2	-	1
Ovarian cancer (n = 14)	2	-	10**	-	-	1	-	1

* This patient had two-primary cancer of stage IA endometrial cancer/stage IC ovarian carcinoma
** This patient had two-primary cancer of stage IC ovarian carcinoma/stage IIB cervical cancer

had injury of bowel serosa during adhesiolysis and one had inferior mesenteric vein injury. However, both cases were successfully corrected under laparoscopic surgery.

Regarding postoperative consequences, only minor complications were observed. Two patients had obturator nerve irritation that could spontaneously regress within two months. One had urinary retention, which recovered after continuous catheterization for eight days. Lymphocyst occurred in two cases, one of whom needed drainage for the resolution. There was no abdominal wound infection. Nevertheless, vaginal stump necrosis occurred in two patients who received preoperative chemotherapy. One could subside by the antibiotic treatment while the other one developed vaginal evisceration at 4-week post operation, of which open surgery to correct the stump was necessitated. The median recovery time after surgery was three days (range 2-8 days).

The median follow-up timing after laparoscopic surgery were 17 months (range 3-34 months) and 16 months (range 1-36 months) in endometrial and ovarian malignancies respectively. No long-term complication was observed. Safely, no port site metastasis occurred. One ovarian cancer case that had had fertility-sparing surgery became pregnant 12 months later and delivered a normal infant with an uneventful outcome.

During the follow-up period, two patients died from their cancers. One patient with stage IIIC endometrial cancer had recurrent disease at 11-month post operation and died one month later. The other patient with two-primary cancers of ovarian/endometrial carcinoma died at 2-months post surgery from the disease progression after the first course of adjuvant chemotherapy.

Discussion

The feasibility, safety, and validity of laparoscopic surgery for gynecologic conditions have been recognized over a decade[3,7,8]. A number of studies demonstrated successful and satisfactory results of laparoscopic lymphadenectomy in ovarian, endometrial, and primary peritoneal cancers[5,9]. Although laparoscopic lymphadenectomy consumes longer operative time, the procedure yields advantages over the laparotomy technique in terms of less blood loss, lower intra- and postoperative morbidities, and shorter duration of hospital stay[5,7-11]. Besides, the magnification of the instrument and the positive pneumoperitoneal pressure make the operative field clearer, so that lymph node dissection is easier and more complete[11]. The authors found that the median number of resected pelvic nodes was 12 and the median number of para-aortic nodes was one, which were lower than the average resected pelvic and para-aortic nodes from a previous study (18.1 and 6.8 nodes respectively)[12]. These differences might be explained by the differences of population studied, sample sizes, quality of the instruments, as well as experience of the surgeons. Nevertheless, to improve the authors' skills, advanced techniques and extensive training are required.

The type of hysterectomy performed with laparoscopic lymphadenectomy had an impact on the operative time. In one study, the operative time of TLH was shorter than that of LAVH, particularly in the obese patient with narrow vaginal canal[13]. In contrast, the results of Ghezzi's study[13] and the present study demonstrated that the operative time of LAVH was shorter than that of TLH. In the authors' institution, the surgeons are more familiar with the LAVH technique while performing TLH is still in a learning curve. Aside from the operative time, the type of operation also influences on intraoperative blood loss. Ghezzi reported that blood loss in TLH was less than that in LAVH[13]. On the other hand, the present study found more blood loss in the TLH group. With the same explanation, our team the authors are more familiar with the LAVH technique.

In the present study, the main reason for conversion to open surgery was an uncorrectable injured site via laparoscopy. The authors further explored characteristics of one patient who had vascular injury and one who had bowel injury, and found that the patients had marked obesity (BMI = 43.75) and overweight (BMI = 29.17) respectively. The incidence of vascular injury, resulting in laparotomy, in the present study was 3.2%, which was in the range of 0-4.9% reported in previous studies[7,12,13]. However, the more experience is gained, the less complication would occur[10]. In addition to obesity, Tozzi's study reported that adhesion and intraperitoneal disease were significant factors for conversion to laparotomy[14]. Tozzi's and the present studies found that advanced age were not the significant risk for laparoscopic surgery. Thus, the authors suggest that elderly patients should not be excluded from such procedure unless these patients have any other medical or anesthetic risks. The median recovery time in the present study was only three days, which was in the same direction as previous studies that laparoscopic surgery yielded advantage for an early recovery.

Survival of the patients who underwent laparoscopic staging of endometrial carcinoma was reported to be not significantly different to that of the patients undergoing laparotomy technique[14]. Although the present study did not compare survival of the patients in both groups, the postoperative follow-up showed that two patients died from advanced disease. More studies with larger numbers of patients as well as longer follow-up periods are warranted to compare the survival rate.

Conclusion

The results suggest that surgical staging for gynecologic malignancies can be adequately performed through laparoscopic surgery. Due to its advantage in terms of early postoperative recovery, this technique could be an option for the patients.

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ผลการผ่าตัดเลาะต่อมน้ำเหลืองในอุ้งเชิงกรานในผู้ป่วยมะเร็งนรีเวชผ่านกล้องส่องช่องท้องในวิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล

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วัตถุประสงค์: ผลของการผ่าตัดในผู้ที่ได้รับผ่าตัดต่อมน้ำเหลืองในอุ้งเชิงกรานในผู้ป่วยมะเร็งนรีเวชผ่านกล้องส่องช่องท้อง

วัสดุและวิธีการ: ทำการศึกษาแฟ้มประวัติผู้ป่วยมะเร็งนรีเวชที่ได้รับผ่าตัดเลาะต่อมน้ำเหลืองในอุ้งเชิงกรานในผู้ป่วยมะเร็งนรีเวชผ่านกล้องส่องช่องท้องในวิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล ระหว่างวันที่ 1 พฤศจิกายน พ.ศ. 2547 ถึง วันที่ 28 กุมภาพันธ์ พ.ศ. 2550 จำนวน 31 ราย

ผลการศึกษา: ผู้ป่วยที่ศึกษาเป็นมะเร็งมดลูก16 ราย(ร้อยละ 51.6) และมะเร็งรังไข่ 15 ราย (ร้อยละ 48.4) มัธยฐานของอายุเท่ากับ 47 ปี (24-77) มัธยฐานของต่อมน้ำเหลืองในอุ้งเชิงกรานและพาราเอออติกเป็น 12 ต่อม (3-30) และ 1 ต่อม (1-3) ปริมาณการเสียเลือดเฉลี่ยระหว่างผ่าตัด กรณีผ่าตัดเฉพาะต่อมน้ำเหลือง กรณีร่วมกับการผ่าตัดมดลูกทั้งหมดผ่าน กล้องส่องช่องท้อง (TLH) และกรณีร่วมกับการผ่าตัดมดลูก ผ่านทางช่องคลอด โดยใช้การผ่าตัดผ่านกล้องช่วย (LAVH) เท่ากับ 100 มล. (30-220) 350 มล. (100-800) และ 200 มล. (150-400) ตามลำดับ ภาวะแทรกซ้อนที่ต้องเปลี่ยนการผ่าตัดแบบการเปิดหน้าท้องเพื่อแก้ไขการบาดเจ็บมี 2 ราย คือการบาดเจ็บของหลอดเลือดแดงอิลิแอกและลำไส้ใหญ่ ระยะเวลาการฟื้นตัวหลังผ่าตัด 3 (2-8) วัน

สรุป: การผ่าตัดเลาะต่อมน้ำเหลืองในอุ้งเชิงกรานในผู้ป่วยมะเร็งนรีเวชเพื่อกำหนดระยะของโรคผ่านกล้องส่องช่องท้องสามารถทำได้เพียงพอต่อการหาระยะของโรค โดยมีระยะฟื้นตัวหลังผ่าตัดสั้น